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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE•

FEBRUARY 24, 1934

A Most Incredible Infant

See Page 118

A SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

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The Weekly Summary of Current Science

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Edited by WATSON DAVIS

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DO YOU KNOW?

The custom of naming babies after relatives is as old as ancient Egypt.

Some lemons grown in Africa are so big that a single fruit may yield a pint of juice.

Italian archaeologists plan to excavate the Roman Circus Maximus, where races and other spectacular events were held.

An expedition from Hebrew Union College, Cincinnati, is to excavate in the region of Petra, ancient city famous for its buildings cut out of rock.

Cheap seed may be expensive, warns the Department of Agriculture, after testing low-priced packets and finding many weed seed and seed that would not grow.

Accidental importation of the mosaic disease of sugarcane cost the sugarcane industry in this country over $100,000,000 before it was finally brought under control.

Bluebirds almost faced extinction late in the 90's.

"White House" was the name given to the royal treasury of Middle Egypt in early days.

A set of artificial teeth worn by George Washington is a valued exhibit belonging to the Baltimore College of Dental Surgery.

The oldest piece of dated glass is an Egyptian bead bearing the name of the Pharaoh Amenhotep I, who ruled between 1559 and 1539 B. C.

The one distinctly American contribution to overland transportation is said to be the buggy, essentially a light, four-wheel wagon, which appeared about 1820.

In Saxon times the year in England began in the spring; but when William the Conqueror was crowned on January 1 he ordained that the year should begin on that date.

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These curiosity-arousing questions show at a glance the wide field of scientific activity from which this week's news comes. Book references in italic type are not sources of information for the article, but the reference for further reading. Books cited can be supplied by Book Department, Science News Letter at publishers' price, prepaid in the United States.

PHYSICS

Existence of Anti-Photon Suggested by Nobelist

Prince de Broglie Works Out Mathematics For New Particle Just as Dirac Foresaw Now-Confirmed Positron

THE SUCCESS of science in finding the positron which is the running mate for the electron has spurred more speculation, and the latest prediction is that an anti-photon will be found.

Science has come a long way from the days when the atom was visualized as the ultimate unit of matter, and when energy and matter were looked upon as quite different manifestations of nature. The photon is conceived of as the ultimate unit of radiation, or as the physicists say, it is "a quantum of radiation energy." It is a corpuscle of light.

Physicists believe that under certain circumstances the photon can be transformed into a corpuscle of matter, such as a positron, and conversely, it will be created when a corpuscle of matter is annihilated. Naturally physicists would like to know something of the mechanism of these operations, and in a thing so far removed from direct observation the first step is to think out mathematically how it might happen.

This step has been taken by Prince Louis de Broglie, physics Nobelist of 1929, who presented a paper on the subject to the Paris Academy of Sciences (published in the *Comptes Rendus*). Recalling that Prof. P. A. M. Dirac in his electron theory proposed that there were holes or anti-electrons, as he called them, into which the electron could fall and disappear from this world, and that this seemingly fantastic theory was later confirmed by the discovery of the positron, which corresponded in its behavior exactly with Prof. Dirac's anti-electron, Prince de Broglie proposed that the light corpuscle is always accompanied in its flight by an anti-corpuscle or hole, which has the same relation to it that the positive electron has to the negative electron in the theory of Prof. Dirac.

"The photon," Prince de Broglie said, "is thus a complex particle formed of two symmetrical constituents capable of self-annihilation." In the presence of matter, the photon is capable of delivering to the latter a quantum of energy, the light corpuscle falls into the hole that accompanies it, and the photon is annihilated.

This theory of "holes" goes back to the hydrodynamic theory of sources and sinks, points where the fluid flows into and out of the region considered. Adding a fourth dimension, so that the material could flow into and out of the universe of our perceptions, and assuming that the "holes" were free to move, the equations showed that they would obey the law of gravitation and otherwise comport themselves like material particles. The sources behaved in every way like respectable atoms. For the sinks one had to assume a kind of negative or anti-matter. This was the difficulty which kept those old theories of matter in the realm of fantastic speculation, although the mathematics was perfect.

Now it is only necessary to assume that energy as well as matter can flow into and out of these holes, and that whenever energy flows in, an equivalent quantity of matter flows out of the same hole, and vice versa: in short, that a source for energy is a sink for matter and vice versa. If further the energy is quantized, that is, atomized, to correspond with the electronic construction of matter, then the essentials of the theories of Prof. Dirac and of Prince de Broglie will be fulfilled. It remains to be seen whether the theory of Prince de Broglie will be confirmed like that of Prof. Dirac. If satisfied with his mathematics, physicists will undoubtedly soon be looking for the anti-corpuscle of light.

COINS OF HISTORY

The recently discovered bottom coin explains the top one.

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ARCHAEOLOGY

Oldest Known Jewish Coins Reveal Freedom After Exile

COINS that shed new light on an obscure period of Jewish history have just been discovered in a private collection in Jerusalem.

The coins are of the fifth century B.C., which is three hundred years older than any Jewish coins heretofore known. The money known to have been regularly used in ancient Palestine was foreign money, chiefly coins of nations which in turn dominated the Hebrew country. It has been supposed that the Jews were not allowed to issue their own coinage until a Syrian king granted that liberty about 139 B.C.

The new discovery shows that after the Persians swept the Babylonians from power, and allowed the exiled Jews

to return to Jerusalem. the Persian king granted autonomy. Discovery of the coins was made by Dr. E. L. Sukenik, field archaeologist of the Hebrew University.

The Jerusalem coins are said to match a small silver coin which for the past 150 years has been in the British Museum. It bears an inscription of three Aramaic letters, which Dr. Sukenik now declares have always been wrongly interpreted by scholars and therefore the significance of the coin was not completely understood. He reads the letters as "Yehud" which was at one time the official name of the province of Judea. The coins bear the engraving of an owl, under which appear the three letters in the old Phoenician Hebrew script.

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ASTRONOMY

Woman Uses Prize To Found New Award

DR. ANNIE J. CANNON, the Harvard astronomer, has utilized the thousand dollar prize awarded her last year by the Association to Aid Scientific Work by Women to found an award which will honor other women for distinguished contributions to astronomy.

The American Astronomical Society will administer this endowment and the first award of the "Annie J. Cannon Prize in Astronomy" will be made next December. Women of all countries will be eligible to the award which will be made triennially.

Dr. Cannon is noted for her work on the Harvard Star Catalog and she has been given honors both here and abroad for her researches in astronomy.

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▼ RADIO ▲

POPULATION TRENDS OF AMERICAN GROUPS

an address by

Dr. Frank Lorimer

of Washington, D. C., engaged in population research

Wednesday, February 28, at 4:30 p. m., Eastern Standard Time, over Stations of the Columbia Broadcasting System. Each week a prominent scientist speaks over the Columbia System under the auspices of Science Service.

PSYCHIATRY

Only One of Identical Twins Attacked by Mental Disease

Case of Successful Man and His Unfortunate Brother Shows That Environment, Not Heredity Alone, Causes Insanity

A CASE of twins, one of whom developed the mental disease schizophrenia, while the other remained well for a period of eight years, was reported to the Boston Society of Neurology and Psychiatry by Dr. J. Kasanin, of the State Hospital of Mental Diseases, Howard, Rhode Island.

The twins were always so much alike that they have been mistaken for each other, even their fingerprints bearing striking resemblances. It is therefore believed that they are of the type known as "identical twins," which have their origin in a single egg cell and hence have identical heredity.

A case of such identical twins, only one of whom develops the insanity, is very important in indicating that environment, not heredity alone, is the determining cause of the disease.

The lives of the brothers were very much alike up to the age of 18. Both were bright, studious boys, and both became excellent mechanics. While in high school, both became extremely interested in religion. Both suffered from an impairment in hearing which was greater in one ear than in the other.

But after graduation from high school, one of the boys had an opportunity to go to another city and work with an uncle. This boy, whom we shall call "C. D.," became very successful. "Life smiled on him." He soon had saved enough money to go to a college of osteopathy and at the present time is doing comparatively well in private practice.

The twin brother, "A. B.," was like the unfortunate "little piggy" of the nursery rime. He stayed home. He tried to write, but was unsuccessful in having anything published. Instead of confessing to himself his inability to write, the patient began to feel that some person or organization was preventing him from making good. He thought people were trying to blackmail him and trying to prevent the publishers from accepting his manuscripts. He thought he was being shadowed by detectives. This delusion made life so miserable for him that he went from city to city to escape the persecution. Gradually his mental condition grew worse and worse until he was sent to a hospital for treatment.

"I think this case illustrates very beautifully the relative importance of environmental factors," Dr. Kasanin commented.

"Both these individuals with the same endowment and the same early environmental forces begin to show at eighteen an altogether different psychobiological reaction. With the favorable environment for one individual he becomes a successful, well adjusted man in his community. When the environment becomes bad for the other individual, who is endowed exactly as his brother, he has to find a solution of his failure in a psychosis."

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PHYSICS

Findings of Stratosphere Flyers Surprise Scientists

THE SCIENTIFIC findings of the explorers of the stratosphere in the Soviet "stratostat" USSR are at variance with earlier theoretical calculations of physicists which were based upon the theory that no convection of air takes place at that height, it appears from an announcement by Prof. A. Wangenheim.

Analysis of samples of air taken during the flight last September showed that the oxygen content of the stratosphere 19 kilometers (11.8 miles) above the surface of the earth varies very little from the oxygen content of the air at the surface. The analyses were carried out by a special commission under the leadership of Academician A. A. Chernishev of the Institute of Physical Chemistry, Moscow.

Tests of the samples of air, made in two laboratories, proved identical in their results, which differ slightly from the theoretical calculations of such sci-

DOLLS FOR SCIENCE

A parade of Russian dolls, sixteen in all, has been brought from the Soviet Union to the University of Pennsylvania Museum, in Philadelphia. (See SNL, Feb. 10, '34 p. 83) Museum scientists explain emphatically that these are not toy dolls, but scientific reproductions, of a people. In careful detail, they show the clothing and the racial types of sixteen Soviet tribes. From left to right: Usbeck, Kalamik, White Russian, Samoyed, Georgian, Circassian, Great Russian, and Ukranian.

entists as Wegener, Störmer, Humphreys, and Gutenberg, which indicated an oxygen content of not more than 19 per cent. The new results confirm the theory of some convection at that altitude, recently adopted by the physicists.

The samples of air were taken by means of glass bulbs suspended from the stratostat, opened and hermetically sealed by electricity while the stratostat ascended. Three of the four bulbs carried worked without a hitch.

The composition of the air 18.5 kilometers (11.7 miles) above the earth was found to contain moisture of less than 0.7 per cent.; 20.95 per cent. of oxygen and 78.13 per cent. of nitrogen; 0.92 per cent. of argon and other rare elements. At sea level the atmosphere contains 21 per cent. oxygen and 78 per cent. nitrogen.

A commission headed by Academician S. I. Vavilov analyzed the records of the stratostat on cosmic rays and Prof. Wangenheim announced that the cosmic ray findings provide grounds for a new theory of stratosphere structure.

In the lower spheres cosmic rays cause very little ionization in the air, forming not more than one to two ions a second in each cubic centimeter. The records of the stratostat at an altitude of 12 kilometers (7.5 miles) show 226 ions in a cubic centimeter per second; at 15 kilometers (9.3 miles) 342 ions; and at 17.7 kilometers (11.0 miles) 360 ions. These data are said to coincide with those of Prof. Piccard and to a certain extent confirm the hypothesis of the cosmic origin of these rays.

SEISMOLOGY

Long Rise in Earth Level Preceded Great Indian Quake

THE LEVEL of the part of India where the disastrous earthquake of January 15 occurred has been rising at an average rate of .06 foot a year, or six feet a century, for the last seventy years at least. The earthquake was associated with this change of level, together with the unique state of internal stress which has hitherto occurred in this region.

Such is the conviction of Dr. J. de Graaf Hunter, former director of the Survey of India. He explained it at a geophysical discussion held at the headquarters of the Royal Astronomical Society in London.

Two years ago, when Dr. de Graaf Hunter was endeavoring to reconcile the numerous spirit-level observations made in Bengal between the years 1862 and 1930, he found evidence that the land was rising at a regular rate. He constructed a diagram in which lines drawn on a map of northern India indicated the various rates at which the rise of level was taking place.

The lines passing through places having the same rate of change ran approximately west-southwest to east-northeast. The line indicating zero change of level passed about fifty miles north of Calcutta. The line indicating the maximum change of .06 foot a year ran about thirty miles north of Benares, and passed through the position calculated to be the epicenter of the January 15 earthquake. This position is latitude 26 degrees 8 minutes, longitude 86 degrees 3 minutes.

Other researches carried out by Dr. de Graaf Hunter during his directorship of the Survey of India, showed, as a main feature of the figures obtained for the "overloading" and "underloading" of the earth's crust in that country, that there is (or was before the earthquake) an area of about 100,000 square miles with a high average "underload." This "underload" was equivalent to a thickness of approximately 3,000 feet of surface rock, after allowing full isostatic compensations.

This region, whose crustal stress Dr. de Graaf Hunter believes to be unique when its large extent and great underloading are both considered, stretches roughly from the Himalayas to the Ganges, and from Meerut, near Delhi, to Jalpaiguri, near Darjeeling, and it includes the whole earthquake zone.

The earthquake of January 15 was the culmination of the long-continued stress due to this widespread underloading and to the consequent rise of level, Dr. de Graaf Hunter believes.

ANTHROPOLOGY

Measure Your Giant Carefully And His Size Will Shrink

THE AMERICAN public may scoff a bit at fairies, but it would like very much to believe in giants.

At least, so it appears from the thin but steady stream of letters received at the Smithsonian Institution.

Every month in the year brings these letters. They come from people eager to tell that they have found the bones of a race of seven or eight foot giants that stalked about the countryside in the ancient times.

It is the task of the Smithsonian anthropologists to explain to these giant-finders the facts about giants. It is a thankless task, and sometimes the people who so eagerly asked the Smithsonian's opinion are downright annoyed to have their folktale illusions shattered.

On the other hand, the Smithsonian anthropologists grow somewhat weary of the giants. There is such a sameness about them, for nearly all of them are conjured up into being by the same set of mistaken ideas.

If you come across something that looks mightily like a giant, therefore, pause, and consider these points on the anatomy of giants vs. ordinary morals, as explained by Dr. Ales Hrdlicka, the Smithsonian's curator of physical anthropology:

"The estimate of stature," he explains, "is usually based on the thigh bone of a man of ordinary size. But the person unfamilar with human anatomy does not know that the upper joint of the femur is several inches higher in the sacral region than would appear from superficial examination of the living body. The finder makes a hurried comparison of the length of the fossil thigh bone with his own, applying the specimen usually to the front of his body, and from this calculates roughly the size of his hypothetical 'ancient giant.' The height usually appears between seven and eight feet.

"The jaw bones of the 'giants' almost invariably fit into a series of the jaws of extant peoples. Some may be rather massive, but seldom excessively so. But the first act of the finder is to fit the jaw bones over his own. He generally finds that he can do so, and jumps to the conclusion that the owner must have had an abnormally large jaw. Actually, most adult jaw bones, unless narrow, can be fitted over those of living persons, to a certain extent at least."

Occasionally, Dr. Hrdlicka says, the bones that are thought to belong to giants are not human at all. This is especially true in Mexico, where bones of extinct mammoths are mistaken for some marvelously huge race of men.

Out of the lot of the reports, an occasional abnormal human being is revealed. After all, there are giants in the circus today for us to wonder at. But the size of such big men and women is generally attributed to glandular disorder. And they are rare types.

The Smithsonian will tell you, at any rate, that there was no prehistoric race of giants—or pygmies either—among the wonders of America's past.

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RADIO—EXPLORATION

Byrd Dogs Sleds Have Short Wave Radios

EVEN the sledge parties of the second Byrd Antarctic Expedition, when out scouting, will be able to communicate by radio with the base at Little America. Some of the dog sleds are equipped with combination one-watt transmitting and receiving sets.

These sets are very small, five inches square, and operate with ordinary dry batteries. For receiving, each set has earphones, and an airplane microphone is used for speaking. A mere flip of a switch shifts from sending to receiving. The whole apparatus, sending and receiving, is encompassed in a tiny aluminum box.

Owing to a peculiarity of short waves, which are sometimes called quasioptical waves because of their similarity in quality to light waves, the sending and receiving range of these one-watt sets is limited only by the distance of hump visibility. If with one of these sets a signal is sent from a mountain from which one can see forty miles, then the set will send signals that distance, or receive signals originating forty miles away.

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ZOOLOGY

Cub of Giant Panda In Philadelphia Museum

See Front Cover

RARE among even the rarest of large wild animals is the giant panda, and rarer still is the sight of its young. Indeed, until the Dolan-West expedition of the Academy of Natural Sciences of Philadelphia penetrated to the home of these strange bear-like creatures that are not bears, in Szechuan Province, in the mountainous West of China, no white men had ever seen a panda cub. The expedition brought home the skins of a panda family group, adult male and female, and year-old cub; and these are now on view.

The little panda is remarkable in that he reproduces in every detail the astonishing markings of his parents: black ears and eye-patches, black legs, a black band over his shoulders; the rest all white. With relatively few exceptions, the pelage of young mammals differs from that of the adults.

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DOG SLED RADIO

Complete transmitter and receiver, a one-watt combination set.

SOCIOLOGY

Bill of Indian Rights Now Before Congress

Measure Would Return Early Americans to Tribal Life; Called Most Far-Reaching Indian Legislation in History

A BILL just introduced into the House of Representatives by Representative Edgar Howard of Nebraska makes a new man of the Indian.

It is a bill of Indian rights, drafted after months of considering what is as complex a problem as white man or red ever tackled. Numerous Indian welfare associations have unanimously endorsed the main principles of the bill.

Commissioner of Indian Affairs John Collier calls it "the most far reaching measure of legislation in the whole history of our dealings with the Indians." Yet he adds that it is not radical legislation, but truly conservative.

The two main features of the bill are these, First, a new deal for the Indian economically. Second, a new deal culturally and politically. That pretty nearly covers everything.

The economic reform is basic. The allotment land law of 1887, which has cost the Indians the loss of two-thirds of their land and pauperized whole tribes, is to be repealed. In 1887, it seemed a good idea to try turning the Indians into "responsible citizens" by making them individual property owners, like the white men. But the idea has worked out with unexpected and appalling results. The Indian Office finds 100.000 Indians landless, and most of these paupers, from less than 50 years experimenting with the white man's method of owning land.

Tribes to Rule

The Howard bill provides for a return to tribal ownership. In cautious detail the bill describes the devices for safeguarding vested rights of Indian property holders and for improvement of lands managed by the tribes. It is a return to the Indian's own economic system, plus modern advantages.

The political and cultural reforms are equally sweeping. The tribes are to take over self-government. Tribal councils are to be given authority. As fast as the Indians become able to run their own reservations they are to assume those tasks.

Freedom of worship is to be offered to the Indians. The native Indian ceremonies are the center of Indian life, and vitally important in the morality and industry of the tribe, as the present Commissioner sees it.

Most remarkable of all, perhaps, the Office of Indian Affairs willingly curbs its own autocratic powers over the Indians, and assumes a cooperating and advising relationship.

"We have no illusions about the difficulty of the task ahead," says Mr. Collier. "But we know that the Indians all over the country have awakened and are thinking, as they have never thought before."

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MEDICINE

Cod Liver Made Into Chocolate Bars

IF JUNIOR refuses to take his cod liver oil "straight," he probably will not object to eating it in a candy bar or ice cream, which he may soon be able to do as a result of recent investigations.

A method whereby the fresh cod livers can be mixed with cocoa in such a way that all the health-giving properties of the livers are retained without oiliness or objectionable taste or odor remaining has been devised by H. A. Wentworth of Fairhaven, New Brunswick, the Canadian Department of Fisheries has announced. The new mixture can be successfully used in the manufacture of a chocolate confection.

Manufacture of the candy has already been started and persons who have eaten it declare it is impossible to notice any taste of the oil. The liver-cocoa mixture has also been used in making ice cream and milk and egg shakes.

While the mixture carries no taste or smell of oil, it is produced by a "cold process" and it is stated that there is no impairment of the livers by chemical or physical changes and that they therefore retain unchanged in quality their natural maximum quantity of vitamin A, the growth vitamin, and vitamin D, the rickets-preventive, "as well as substances for pernicious anemia and goiter therapy."

To date it has been believed that there was no means of preserving fresh raw livers but the Canadian experimenters have found that by their methods the livers may be preserved for at least twelve months, and the method is very simple in principle. The livers are first put through sieves to remove skin and muscles, then they are mixed with cocoa in varying amounts, and the resultant heavy dough is passed through rollers and grinders. The mixture as it comes from the rollers has the appearance of cocoa. The operation takes only a short time.

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PSYCHIATRY

Twins Prove Brain Injury At Birth Affects Mentality

PROOF of the long-suspected fact that injury to a child's brain at birth will affect mentality has been afforded by two little Italian girls who are identical twins.

One of these little girls suffered a head injury when she was born. Her twin sister did not. The one who was injured is slightly duller than her sister and is a year behind her in school. The only physical signs of the injury are a slight tendency to the nervous movements typical of St. Vitus' dance.

The twins were described by Dr. Richard L. Jenkins and Esther Glickman of the Chicago Institute for Juvenile Research at the meeting of the American Orthopsychiatric Association.

Dr. Jenkins explained that the condition of the injured twin is typical of many children seen in a child guidance clinic. In these cases there is reason to believe the brain has suffered slight damage but the signs are insufficient to constitute diagnostic proof. In the case of the twins, the normal twin furnishes the proof that brain injury at birth is the cause of the mental dullness in her sister's case, and also in other children, suffering from a similar mental condition and known to have been injured at birth.

In addition, Dr. Jenkins pointed out, the normal twin gives a picture of the development of a genetically identical individual in the same home environment without the physical handicap.

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ANTHROPOLOGY

"Modern" Remains Found In Cave of Peking Man

THE CAVE where scientists unearthed Peking Man, China's oldest known inhabitant, has now yielded remains of a later important tenant. Dr. W. C. Pei and M. N. Pien of the Chinese Geological Survey have found human bones in an upper cave level, and these are pronounced the bones of *Homo sapiens*, or modern man.

The discovery reveals that China was in step with the world in the latter part of the Old Stone Age, having its own Stone Age men who made tools like those of the age in Europe and Siberia.

China's earliest modern men are found accompanied by stone and bone implements, a necklace of fox teeth, ashes and charcoal remains of fires, and bones of such animals as the tiger, hyena, wild ass, and deer. The human remains include two crushed skulls almost complete.

Bones of a large type of baboon have been found in the cave. Reporting this and the other latest discoveries from the cave to *Nature*, Prof. Davidson Black, directing the Chinese Geological Survey's researches on early man, has concluded that the cave was inhabited successively by baboons, old Peking Man, and man of our own species. This series of tenants he calls a "coincidence."

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ENTOMOLOGY

Mineral Coating on Rice Discourages Weevils

COATING rice with mineral dusts, to keep down heat generation during milling, also discourages the breeding of insects that infest the stored grain. So states Dr. E. R. de Ong, consulting entomologist of San Francisco.

Weevil injury to stored stocks of rice becomes very severe at times since much of the crop must be carried through the hot weather of summer until the harvest in late fall.

The difference in weevil infestation of rice coated with calcium carbonate and untreated rice was noticed and experiments made to determine the value of the coating for protection alone. In a jar of uncoated rice, several living rice weevils and bran bugs were placed. A similar number of living weevils and bran bugs were placed in another jar containing rice to which one per cent. of finely ground calcium carbonate had been added. These jars were kept at a temperature ranging from 50 to 75 degrees Fahrenheit, with sufficient moisture added to favor breeding.

In sixty days the rice weevils had creased 50 per cent. in the coate and in the uncoated rice 25 pe t. The striking results, however, c e at the end of a year following the higher summer temperatures which had stimulated breeding. The number of weevils in the coated rice had remained absolutely stationary throughout the year. That is, there had been just sufficient breeding to equal the small number dying. In the uncoated rice the weevils had increased more than one thousand per cent. The bran bugs had decreased slightly in both lots of rice.

The weevil attack in the uncoated rice resulted in a loss in weight of 42 per cent., a cubic foot of the coated rice weighing 76 pounds and the uncoated rice 44 pounds. The infested rice also had a very dirty appearance, necessitating the expense of recleaning besides the additional loss of weight.

Science News Letter, February 24, 1934

BOTANY

Grass Seeds Fly High, Airplane Traps Show

GRASS seeds that appear literally to fill the air at certain seasons were described recently by Mrs. Agnes Chase, specialist in grasses of the U. S. Department of Agriculture.

The widespread presence of these seeds in high air levels was discovered as a by-product of airplane flights made in the study of insect distribution. These planes carry open traps that scoop in any flying or floating thing in their paths, so that with the insects they took in a lot of plant seeds. At first these were merely discarded, but when it was pointed out that they might have interest to botanists, the grass seeds were turned over to Mrs. Chase for identification.

The collections on which she reported were made during a limited period in the summer, and contained almost nothing but seeds (or more accurately, seeds and certain attached parts) of just two species of grass. Only a few seeds of other grass species were found. The two species reported so abundantly in the catches of the traps came from all air levels between 200 and 3,500 feet.

Science News Letter, February 24, 1934

IN SCIENC

PUBLIC HEALTH

Drive on Leaks in Narcotic Supply Urged

ONE OUT OF a hundred of those handling narcotic drugs for medical purposes are either drug victims themselves or supply more narcotics to addicts than they should have.

This condition, revealed by a U. S. Bureau of Narcotics survey, caused H. J. Anslinger, U. S. Commissioner of Narcotics, to appeal to state medical examining boards for aid in stopping up these leaks that allow addicts to receive drug supplies intended for legitimate medical use.

While most physicians observe the federal law regulating the sale and use of morphine and other narcotics, the U. S. survey revealed that out of 150,000 physicians, dentists, hospitals and veterinarians registered under the Harrison Narcotic Law, about 1,700, mostly practitioners, were using narcotics for addiction purposes.

Mr. Anslinger recommended revoking the licenses of offending physicians, since without licenses they could not register under the Harrison Narcotic Law and thus could not obtain narcotics from legitimate sources.

Science News Letter, February 24, 1934

SEISMOLOGY

Earthquake Centered Under Northeastern China Sea

THE EARTHQUAKE that was felt in Manila on Tuesday, Feb. 13, centered in the bottom of the northeast end of the China Sea, between Manila and Hong Kong, about 400 miles to the southeast of the latter port. This determination of an approximate epicenter was made by seismologists of the U. S. Coast and Geodetic Survey, on the basis of data collected telegraphically by Science Service.

The geographical coordinates of the epicenter were approximately 21 degrees north latitude, 120 degrees east longitude. Time of origin was 10:59.5 p. m., Eastern Standard Time.

Science News Letter, February 24, 1934

NCE FIELDS

NUTRITION

Vitamin D in Diet Aids Tropical Fish

TOO MANY of J. I. Spira's tropical fish were dying: they developed a sort of softening of the spine, grew pale, and at last turned belly-up. Dr. Sidney Brown of Chicago, borrowed an idea from his practice, and suggested giving them viosterol, which is ergosterol rayed with ultraviolet, which in turn constitutes it a concentrated form of the rickets-preventing vitamin D.

Mr. Spira carried out his friend's suggestion, adding the oil-dissolved viosterol to the regular fish ration of dried shrimp, beetle and ground fresh liver. The sick fish grew healthy again, although the ones that had become deformed did not recover normal shape. Mr. Spira relates his experience in *Science*.

Science News Letter, February 24, 1934

PUBLIC HEALTH

Physicians Should Direct Teaching About Health

SINCE the public has awakened to a keen curiosity about its health, it is up to physicians to supervise the job of health education for the layman, seeing that it is done sanely, wisely and conservatively, Dr. W. W. Bauer of the American Medical Association told medical educators gathered in Chicago at the Annual Congress on Medical Education, Licensure and Hospitals.

"The time has definitely gone by when a patient will blindly take three pink pills in half a glass of water before meals and four green pills in a third of a glass of water before bedtime without having the slightest idea what may be wrong with him and why he is being advised as he is," Dr. Bauer pointed out.

Although he granted that too much medical information does arouse neurasthenic tendencies in the morbid, Dr. Bauer maintained that this disadvantage is outweighed by benefits from health education. These include a better appreciation of medical science, better understanding of difficulties involved in diagnosis and treatment, more interest in scientific research and livelier appreciation of hygiene, diet and medical supervision in health.

At present the public curiosity is mainly misdirected, the interest often converging where it ought not to and failing to focus where it might accomplish good, Dr. Bauer asserted. One of the principal factors in this misdirection is the activities of persons engaged in exploiting the public's interest in health for private profit. These efforts constitute, Dr. Bauer said, "the plainest handwriting that was ever written on any wall admonishing the physician that he must function as a health educator" if he is to save the public from its own folly and if he is to retain his own leadership among guardians of health.

Science News Letter, February 24, 1934

PSYCHOLOGY

Parents Should be Treated In Problem Child Cases

TREAT the parents, not the child, in problem cases. This would seem to be the lesson learned from a study of the success of child guidance clinic treatment in one hundred cases. The study was reported by Dr. Ruth M. Hubbard and Mrs. Christine F. Adams of the Child Guidance Clinic, Strong Memorial Hospital, Rochester, N. Y., to the American Orthopsychiatric Association.

They found that the fault for the children's problem behavior was more frequently in parental attitudes and insight and that success was quite directly proportional to the amount of treatment directed toward the parents rather than to the amount of treatment directed toward the children.

By far the most work at the clinic, however, was done with the children themselves, which, Dr. Hubbard pointed out, is an interesting comment on the treatment program.

The four most important factors in predicting success in the treatment of the hundred cases studied were: cooperation of parents during treatment; degree of initial maladjustment; economic status; and initial contact between clinic and family.

From these factors alone success in treatment can be predicted more accurately than school success can be predicted from intelligence tests, Dr. Hubbard and Mrs. Adams found.

Science News Letter, February 24, 1934

ARCHAEOLOGY

Pottery Corn Ear Fooled Geologist

PERUVIAN Indian potters, unknown centuries ago, made a clay model of an ear of corn so good that it fooled a first-rate geologist.

The story was told before an audience of Washington botanists, by Dr. Roland W. Brown, paleobotanist of the U. S. National Museum.

The specimen, brown and stony-looking, was sent to the Museum many years ago, as a fossilized ear of corn. The geologist (whose name is withheld, because he is now dead) accepted it as such, and filed it in a museum tray.

A shore time ago Dr. Brown took a good look at the supposed fossil, and became suspicious. He split it lengthwise with his stone-cutting saw, and immediately discovered its true nature. He also discovered a hollow in its base, in which were three small rattling pellets of the same hardened clay.

Rejected as a fossil, the pottery ear of corn has now been turned over to the Museum archaeologists, who have also inherited from the geologists the riddle of trying to discover its age.

Science News Letter, February 24, 1934

CHEMISTRY

Turnip Juice Recommended As Source of Vitamin C

JUICE from the lowly turnip is recommended as a good depression substitute for orange juice or tomato juice. Attention is called to its value as a cheap source of scurvy-preventing vitamin C by Dr. E. W. McHenry of the University of Toronto School of Hygiene in a report to the Canadian Medical Association *Journal*.

In Toronto one cent will buy 1,100 vitamin C units from turnip juice, whereas the number of vitamin C units from one cent's worth of lemon juice are 180, from orange juice 220, from tomato purchased as juice 170 and from tomato juice prepared from canned tomatoes 180.

Two pounds of ordinary turnips will give fifteen ounces of the juice, which is said to be sweet and not unpalatable. Salt improves the flavor, but for infants the pure juice is advised. The juice may be easily made at home by grating a section of turnip and pressing the juice from the minced material.

Science News Letter, February 24, 1934

PSYCHOLOGY

How to Think Straight

It is a Rare Habit, Says a Columbia Psychologist, Who Gives a Test For Thinking and Rules to Keep it Straight

By MARJORIE VAN DE WATER

DO YOU think scientifically?

Most people do not, says Dr. Victor H. Noll, of Teachers College, which is part of Columbia University. If people did think scientifically, the depression could never have occurred, and many of our social ills could not exist.

"Individuals who are in the habit of thinking 'straight' do not invest in enterprises of which they know little or nothing," Dr. Noll declares. "They do not mortgage their homes in order to buy expensive luxuries or get rich overnight. Nor do they look down on their friends and acquaintances who refuse to do these things.

"We still spend millions of dollars annually on worthless or positively harmful nostrums—beauty aids and quack remedies. We buy almanacs that predict the weather for a year in advance. We judge a man by his facial characteristics; we vote for or against him because of his clothes, or his religion, or his wife's personality. We still have mediums, soothsayers, phrenologists, palmists, mind readers, and astrologers patronized and supported by persons in all walks of life."

Do you think scientifically?

Fundamental Habits

In order to develop a scientific attitude, you must develop six fundamental habits of thinking, Dr. Noll says. Look the list over and see how many of these habits you have developed in yourself.

1. Habit of accuracy.
2. Habit of intellectual honesty.
3. Habit of open-mindedness.
4. Habit of suspended judgment.
5. Habit of looking for true cause and effect relationships.
6. Habit of criticism, including self-criticism

Perhaps these need some explanation. The habit of accuracy means accuracy in little everyday matters as well as in programs of scientific research. The everyday matter may turn out to be much more important than it seems at the time.

"If the chemist makes a very small error in the determination of the exact atomic weight of an element, the population as a whole may be little affected," Dr. Noll commented. "However, if those responsible for the ill-fated Akron had judged weather conditions differently, perhaps seventy-three lives could have been spared. The switchman of packed subway trains may by a slight inaccuracy endanger the safety of several thousand persons. The inaccuracies of bankers and investment houses, willful or otherwise, have caused thousands to lose their homes and the savings of a lifetime."

With or Without Salt

You know, among your friends, the person who is always right, not just in his own opinion but in fact—the person who gives correct change, who remembers dates correctly if at all, who repeats things just as they are said to him, who never hails you as Kelly when your name is Keely. You also know the person whose statements must always be taken with the proverbial grain of salt, not because of any lack of truthfulness but simply because he is so often in error.

Intellectual honesty is another habit that is quite apart from what is usually thought of as moral honesty. Intellectual dishonesty is quite respectable and indulged in by the most honored individuals. It is what makes the salesman wax over-enthusiastic about the merits of the article he wants to sell. It is what causes the public speaker to overlook the arguments of his opponents. It is what makes the person conducting statistical studies or surveys find just what he is looking for.

"No man is intellectually honest, nor has the scientific attitude if he permits personal pride, bias, prejudice, or ambition to cause him in any way to pervert the truth," Dr. Noll declares.

"Individual researches and even large-scale inquiries have been undertaken and carried out to 'prove' that a certain thing is true or that something else is not true. Under such conditions it is extremely difficult for intellectual honesty to prevail. It seems desirable from every standpoint to cultivate in our pupils the habit of not compromising with truth, at least in so far as truth can be established."

The extravagant exaggerations of Baron Munchausen are examples of intellectual dishonesty. But even worse is the common "stretching of the truth" which is so plausible that it sometimes fools even the perpetrator.

The third scientific habit of open-mindedness should not be confused either with a wishy-washy lack of decision or with eager credulity.

"Eyes and Ears Open"

Instead, Dr. Noll describes it as a sort of "eyes-and-ears-open" policy that precludes the acceptance of any solution as final and ultimate. It means not being a "dyed-in-the-wool" or a "hard-and-fast" advocate of any course from which you are determined never to deviate. It means the constant revision of all your opinions in the light of new discoveries.

You needn't worry for fear the open-mindedness will cause you to lack decision or conviction. Open-mindedness is not timidity; neither is it lack of decision; it does involve the courage to change a conviction made in good faith when conditions or known facts have changed.

"If the physicist had stopped twenty years ago and assumed that his science was complete and closed (as indeed some did), if he had believed that there were no new facts to be discovered, our present-day concept of the nature of matter would probably still be unknown," Dr. Noll said. "However, he kept his mind open, did not accept the atom as the final and ultimate indivisible unit of matter and consequently we have today a greatly revised notion of the nature of matter and of the universe."

"In the social situation, open-mindedness is particularly needed." Dr. Noll adds "We are usually so bound by tradition in politics, finance, and other matters dealing with the public welfare that it seems impossible at times to get anything done except as it has always been done. Campaigns have been

TEST YOUR THINKING WITH THESE QUESTIONS

Ask yourself these questions to find out whether you could qualify as a person with a scientific attitude.

1. Does your fish ever grow between the time you catch it and your telling of the catch?

2. If you meet a neighbor out with a pretty girl, do you immediately assume that he is in love with her?

3. Do you often "stick to your guns" because you hate to admit you may be wrong even though you know you are?

4. Do you believe that if the groundhog sees his shadow, six weeks of winter will ensue?

5. In checking over the bills sent you, do you notice errors at your expense more readily than those in your favor?

6. After you have made a decision, do you ever wonder whether you are right?

7. Do you seek advice from experienced persons when you are making a decision?

8. Are you inclined to check what is told you against the known facts?

9. Can you always be convinced of the truth even when it is something contrary to your interests?

10. Did you ever vote for a man just because you liked his voice?

11. Do you ever buy goods just because you like the personality of the salesman?

12. Are you careful to avoid overstatements even when they add to the story?

A negative answer to all questions except numbers 6, 7, 8, 9, and 12 will mark you as a most unusual person—or else will show that you are not honest with yourself.

made many times on the principle of upholding the good old traditions at any cost. Often reports of survey commissions that included in their membership the best minds available have been discarded because they did not agree with the convictions of their sponsors."

Haven't you had your own troubles in combatting this lack in your associates of freedom in revision of judgment?

Very closely related to open-mindedness is the habit of suspended judgment. The first, Dr. Noll explains, is a willingness to consider all the facts, including new ones as they arise. Suspended judgment means a waiting and searching for such facts before a decision is made.

Don't jump at conclusions, don't make snap judgments, is the rule for those who would develop this fourth scientific habit of thought. Children jump at conclusions and so do many grown-ups who still preserve child-like habits of thought. You needn't be slow, but be cautious in forming any conclusions.

The fifth habit of scientific thought is a much more difficult one to develop —the habit of looking for true cause and effect relationships.

Just because two things occur together they need not be causally related. If you have a quarrel with your neighbor, are you willing to believe it is because you spilled salt at the breakfast table? If a business project succeeds, do you conclude that the success was due to the fact that you began it on a Friday? If the horse you bet on wins, do you think it is because the animal's name is "lucky for you?"

Scientists do not escape from lapses so far as this habit is concerned. Where they find that two conditions commonly occur together, even thoughtful persons are likely to assume a cause and effect relationship although evidence for such a relationship is lacking. Sunspots have thus been blamed as a cause for wars as well as weather. And wars in their turn have been held responsible for changes in the ratio of male births to female. And such major events as the depression have been considered the cause of all ills descending upon mortals at or near the same time.

Not Cause and Effect

Obviously the relationship might be of another kind than that of cause and effect. If thunderstorms are frequent disrupters of Fourth-of-July festivities it need not be that the explosion of firecrackers produces rain. It could well be that both showers and celebrations are likely to occur in July.

The final habit in Dr. Noll's list is that of criticism. By that he doesn't mean fault-finding or a destructive attitude, although even this fault is of greater assistance to the promotion of science than is a blind acceptance of all that is heard or seen in print.

No, what he means is the ability to "see the nigger in the woodpile," to weigh arguments and to detect fallacies.

These six habits do not by any means exhaust all the virtues that might be listed as contributing to the true scientific attitude. But if you have them all, you may consider yourself pretty well off. Dr. Noll says:

"There may be other habits that contribute to the scientific attitude. Other habits might be mentioned and defended as elements in it. Nevertheless, it may be said in defense of those listed that an individual who is habitually accurate, who correctly interprets cause and effect relationships, who is open-minded, who does not jump at conclusions, who is intellectually honest, and finally, who is critical—would be possessed not only of the scientific attitude but also of a certain degree of uniqueness."

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Science News Letter, February 24, 1934

OCEANOGRAPHY

Unexplored Coastal Waters To Be Studied

SECRETS of the sea in the little-known offshore area between Lower California and Costa Rica are to be sought soon by scientists of the Scripps Institution of Oceanography at La Jolla. A great triangular stretch of ocean is at present, for scientific purposes at least, a "no-man's water," because it is little traversed by commercial vessels which might take incidental oceanographic data, and no well-equipped expedition has ever visited it.

For the expedition which will fill in this gap in the scientific map of the Pacific, the Scripps Institution is using recently received gifts from Robert P. Scripps and from the estate of the late Ellen Browning Scripps, together with an appropriation from its own funds, to refit its boat, the *Scripps*. Although only a 64-footer, this boat will be able, when reconditioned, to work several hundred miles out at sea and at any depth to 3,000 meters, thus making it possible for the Scripps Institution to add much to the knowledge of a rather large section of the Pacific about which little or nothing is known.

In altering the vessel, orders have been placed for a Diesel engine to replace the present gasoline engine, for a new winch for deep-sea work.

Science News Letter, February 24, 1934

ARCHAEOLOGY

High Prehistoric Culture Discovered in Oklahoma

A CENTER of high prehistoric culture has been discovered in eastern Oklahoma by anthropologists of the University of Oklahoma. Excavations of Indian mounds, still in progress, are revealing resemblances to the famous Hopewell Mound Builder culture of Ohio.

Finding this particular high type of prehistoric life as far west as Oklahoma is pronounced surprising by Forrest E. Clements of the University. Heretofore, archaeologists have traced variations of the Hopewell manner of living only as far west as Wisconsin and eastern Iowa.

"The department of anthropology," said Mr. Clements, "has located eighteen of these mounds in eastern Oklahoma and there are probably others.

"The mounds so far explored are conical and were built up over a 'floor' of sand or gravel. They vary from ten to 35 feet in height."

Inside the mounds are cremation burials of the Oklahoma Mound Builders. With them are the objects which, to the expert, show an advanced form of prehistoric American living. Copper blades with pieces of clothing clinging to them, preserved by the copper oxide, show that these Indians hammered copper into weapons, though they did not know how to heat and shape it, and that they wove good cloth.

Ear plugs of stone, with designs carved in them, are among the ornaments. Many of these were sheathed with copper. Large stone blades which tipped ceremonial weapons were buried with the Oklahoma Mound Builders, and also numerous tiny "dart points." The pottery which they used for dishes and containers was black with designs incised in it.

Science News Letter, February 24, 1934

PUBLIC HEALTH

Grade Standards Provision Stricken From Copeland Bill

THE NEW Food and Drug bill, now known as the Copeland bill after its amendment in a special Senate subcommittee, has suffered one additional deletion as it moves into consideration by the Commerce Committee, before which public hearings will be held on Feb. 27. The provision for the establishment of adequate standards of quality or grade in foods has been stricken out.

The grade standards provision, as written into the original Tugwell draft of the bill and retained in Senator Copeland's first revision, contemplated a wide extension of the principle as it now exists in the old Food and Drug Act of 1906. By the terms of the old law, a certain minimum of quality is established for canned fruits and vegetables. Any product may qualify for the grade of "standard" by meeting these minimum requirements; and it is also permissible for lower grade but still edible and wholesome products to be marketed as "sub-standard." But above the "standard" minimum there may be whole series of grades, from merely satisfactory or good to superior or excellent, with no reliable designation possible under present conditions. Moreover, the present law applies to canned goods only: such things as packaged cereals and dried fruits are outside its scope.

Various canning companies have long tried, through heavy advertising campaigns, to establish their own particular products as standards of excellence, but since recognized comparison-criteria are lacking, such efforts can be only partially successful. The words "fancy," "extra fancy," "extra select," etc., have become nearly meaningless to the average housewife simply because they have been shouted at her so long and loud. Confidence in certain trade names has been built, by dint of persistent and expensive advertising, but experienced home shoppers have learned that even under the best known of trade names there are often considerable fluctuations in the product.

Public institutions and large private firms have long disregarded advertising claims and bought goods only after quality tests. One of the principal functions of the National Bureau of Standards has been to make such tests for the U. S. Government departments—everything from writing paper to airplane motors must pass the scrutiny of its scientists before purchase is OK'd. Consumer organizations have long been crusading for similar standards for the benefit of the citizens at large, and the standards provision of the new legislation was aimed at this need.

However, certain food packers protested, and certain advertising and publishing concerns opposed the consumer standards provision even more vigorously, so that in the end it was taken out of the bill.

It is not at all certain, however, that the last has been heard of consumer standards. While it is not expected that the clause will be restored to the Copeland bill, there is a quite distinct likelihood that even more sweeping standards legislation will come before either the present Congress or a succeeding one. Many supporters of the consumer standards idea, in fact, have been lukewarm toward the lost clause in the Copeland bill because they felt that food standards alone were not sufficiently inclusive. They want to establish standards for all consumer goods.

Advertisers, they assert, need not fear the loss of their place in the American scheme of things. As much advertising as ever will probably be needed to induce the advertising-conscious American to buy. Copy-writers and layout artists have had to concentrate on convincing the housewife that Little Giant Peanuts, for example, are No. 1 peanuts; but with Uncle Sam's word for it stamped on the bag, they will in future be able to shift their emphasis to persuading her that even though Goliath Peanuts are also No. 1 peanuts, Little Giants are better. And the spread between standard grades will of necessity be sufficiently broad so that competition within a given grade will still be possible. (*See SNL, Jan. 29, '34, p. 39*)

Science News Letter, February 24, 1934

READ OVER THE SHOULDERS OF GIANTS

HOW better can we read of the deeds of great men of science than from over their shoulders as they write their own impressions of the discoveries which have built the world we live in? No matter how often or how well a story has been told there is still a fresh thrill in reading it as it was told the first time.

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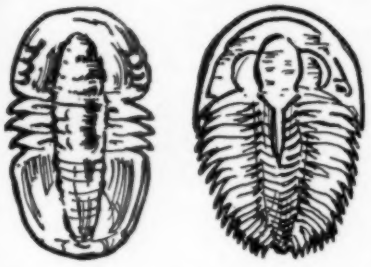
GEOLOGY

NATURE RAMBLINGS

by Frank Thone



When Erosion Was No Problem

EROSION, one of the toughest problems confronting the new national program of a planned agriculture, was no problem half-a-billion years ago, when life on the earth was young. Lands then were broad but low; they did not have high mountains and steep hills to dash rivers downward in mad races to the sea, wearing their stony ribs away and piling the pebbly debris on submarine plains to form the type of rock called "conglomerate," filled with water-worn rolled rocks like raisins in a pudding.

So Dr. Charles E. Resser, Smithsonian Institution geologist, has decided after an exhaustive study of rocks of the Cambrian, remotest geologic period of which there is anything like a full fossil record.

The Cambrian yields plenty of rocks that were formed of bits of older rocks, but the vast majority of them are fine-grained sandstones, slates, shales and limestones. Their constituents were ground down fine, of sizes to be carried into the sea by gentlier-flowing lowland rivers.

The climate of that remote time seems to have been as mild as the rivers were slow, for no sure signs of ice action have ever been found in the Cambrian. Some such indications have been attributed to the Cambrian, but Dr. Resser states that in every case investigation has shown them to belong to the preceding geologic period, the Beltian, in which no certain traces of animal life can be found.

As the lands were low, the seas were also shallow. No great deeps or valleys existed in their bottoms. Being shallow, and lying under equable climatic conditions, they were warm and favorable to the existence of abundant animal life. They did not, however, offer much encouragement to the development of active and aggressive new species. The highest forms of animal life known from the Cambrian were the trilobites, which looked a little like insects, but were really more nearly related to lobsters and crayfish. These creatures ruled the lazy seas for uncounted thousands of years.

If any life existed on land, it must have been scanty or without any fossilizable parts, for no fossil remains of either land plants or land animals have ever been found. It is not improbable that in those days the land was completely desert, and all life concentrated in the sea.

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CHEMISTRY

Gibbs Medal Goes To Heavy Hydrogen Discoverer

FOR DISCOVERY of heavy hydrogen, Prof. Harold C. Urey of Columbia University is to be decorated with the Willard Gibbs Medal, one of the highest science honors.

Chemical laboratories throughout the world are now concentrating efforts on finding the properties of the double-weight twin of ordinary hydrogen and the strange heavy water made with it. Before Prof. Urey, captaining a research team of three, in 1931 discovered deuterium, as heavy hydrogen has been christened, hydrogen's duplicity was unrecognized.

Only 41, Dr. Urey is the youngest among distinguished scientists honored with the medal conferred by the American Chemical Society's Chicago section and named after the American scientific pioneer who contributed largely to thermodynamics.

Science News Letter, February 24, 1934

RADIO-ASTRONOMY

Meteors Affect Reception Of Short Wave Radio

THE RADIO "ham" may now add meteors to the list of natural phenomena affecting his reception of long distance signals along with sunspots and magnetic storms.

During the November shower of Leonid meteors, Drs. R. Minohara and Y. Ito, of the Japanese Naval Experiment and Research Establishment at Tokyo, were working on a series of experiments for determining the height of the Kennelly-Heaviside layer, the radio reflecting area of the upper atmosphere. It was an easy matter for them to determine, as a sort of side issue of their research, the effect of meteors on the transmission of radio signals.

Meteors speed through the upper air at the rate of 26 miles (42 kilometers) a second or more, the investigators stated in a report to the Radio Research Committee of the National Research Council of Japan. The friction caused by these objects hurtling through the atmosphere produces ionization in their pathways before the meteors are heated to incandescence and become visible. Small meteors serve to ionize the upper atmosphere, while the larger ones penetrate to and ionize the air at relatively lower altitudes.

Air or any other substance is said to be ionized when through any cause the molecules, atoms or other particles of which it is composed have electrons knocked out of them, leaving them positively charged.

Even in the daytime, meteors affect radio waves, causing irregularities in reception, it is found. Those of relatively long wavelengths are affected comparatively little, because long wavelengths are reflected at the lower surface of the sun-ionized region of the atmosphere. Shorter waves penetrate farther and may be reflected by "ion clouds" formed by the meteors or by an upper ionized layer formed by the smaller meteors.

At night, when the ionizing effect of the sun is not so great, the effect of the meteors is relatively greater.

Science News Letter, February 24, 1934

First Glances at New Books

Economics

AMERICA MUST CHOOSE—Henry A. Wallace—*Foreign Policy Association and World Peace Foundation,* 33 p., 25c. Secretary of Agriculture Wallace has emerged, during the first year of the New Deal, as one of its major prophets. In this pamphlet, probably his most important single utterance to date, he sums up and presents with new force the gospel which he has been preaching with all the fervor and insistence of an Old Testament prophet: that creditor America must choose between debt payments in goods or no payment at all; that if we elect a strictly self-contained nationalistic course we must rigidly regiment production, but that a planned international economics is possible if we can make up our minds to accept definitely bargained schedules of imports.

Science News Letter, February 24, 1934

Physical Therapy

NATURE, M. D.—Richard Kovács—*Appleton,* 181 p., $2. Dr. Kovács, a physician who is an authority on physical therapy, discusses the "healing forces of heat, light, water, electricity and exercise" in simple, clear language. The book should prove extremely helpful, particularly to anyone about to invest in a sun-lamp, electrical healing device or some other of the many physical therapeutic aids now widely advertised. Dr. Kovács tells just what these devices can and cannot do, when and how they should be used, and when and how they may be dangerous.

Science News Letter, February 24, 1934

Geology

THE DEFORMATION OF THE EARTH'S CRUST—Walter H. Bucher—*Princeton Univ. Press,* xii+518 p., $5. A thorough-going treatise on the problems of diastrophism, which will be useful both as a text in advanced geology classes and as a general reference book. The author reaches out into the mountains of all the world for examples to illustrate his principles, and incorporates also the newest results of laboratory experiments in geophysics.

Science News Letter, February 24, 1934

Ornithology

A REVISED LIST OF THE BIRDS OF IOWA—Philip A. DuMont—*Univ. of Iowa,* 171 p., $1. During the 27 years that have elapsed since the appearance of Anderson's "Birds of Iowa" many changes, both cultural and biotic, have taken place in the state. These are summarized briefly in the opening pages; the bulk of the bulletin is devoted to a check-list with annotations and full discussion of occurrence. This publication will be welcomed by all students of birds who are interested in the avifauna of the prairie regions.

Science News Letter, February 24, 1934

Geography—Demography

THE GEOGRAPHIC BASIS OF SOCIETY—C. C. Huntington and Fred A. Carlson—*Prentice-Hall,* xxi+626 p., $5. A well developed textbook of the new geography, wherein lands and seas are considered as they affect man, his groupings and activities. The senior author, as might be expected, places considerable stress on the importance of climatic factors; balanced with this are equally well-worked-out chapters on soils and environment, land uses, water and its utilization, etc. There are also appendices giving numerous statistical tables and a fifteen-page bibliography.

Science News Letter, February 24, 1934

Medicine

REPORT TO THE UNITED STATES GOVERNMENT ON TUBERCULOSIS WITH SOME THERAPEUTIC AND PROPHYLACTIC SUGGESTIONS—S. Adolphus Knopf—*Procurable from the National Tuberculosis Assn.,* 59 p., $1.15. The author of this report was official delegate to the VIIIth Conference of the International Union Against Tuberculosis, held in 1932. The book is a clear and illustrated account of his experiences both at the conference and later when visiting sanatoria for tuberculous war veterans in France, England and Germany.

Science News Letter, February 24, 1934

Horticulture

THE FLOWER PATCH GARDEN BOOK—Flora Klickmann—*Putnam,* 332 p., $2.50. Busy women who keep gardens around small houses are all sisters under their skins; this book, full of English garden lore well spiced with cheerful gossip, will therefore find an appropriate welcome on the sunset side of the Atlantic.

Science News Letter, February 24, 1934

Medicine

CONTAGIOUS DISEASES, WHAT THEY ARE AND HOW TO DEAL WITH THEM—W.W. Bauer—*Knopf,* 213 p., $2. Dr. Bauer knows from long experience what to tell a mother about contagious diseases and how to tell it so that she will understand it. He has written a splendid handbook which every mother and child's nurse will find profitable reading. The book is not intended as a substitute for a doctor when a child is ill, but as a supplement to his visits and as a substitute and perhaps antidote to the old wives' tales about contagious diseases.

Science News Letter, February 24, 1934

General Science

ORGANIZATION ET PRINCIPES DE L'ENSEIGNEMENT EN U.S.S.R.: LES RELATIONS ENTRE LA SCIENCE ET L'INDUSTRIE—Jean J. Trillat—*Hermann & Cie, Paris,* 69 p., 12 fr. Timely because of the resumption of relations between the U.S.A. and U.S.S.R., scientists will be interested in the survey of science and technology and the research institutions which constitute the third and fourth parts of this brochure.

Science News Letter, February 24, 1934

Public Health

HEALTH THROUGH THE AGES—C.-E. A. Winslow and Grace T. Hallock—*Metropolitan Life Insurance Co.,* 64 p., free to junior and senior high schools on basis of ten copies to every hundred pupils. An interestingly written history of medical and public health progress for high school pupils. To accompany the book an effective wall chart has been prepared and will be sent free on the basis of one copy to a classroom.

Science News Letter, February 24, 1934

Library Science

OUR STARVING LIBRARIES—R. L. Duffus—*Houghton Mifflin,* 148 p., $1.25. This is an incisive study of conditions in ten typical big-city libraries, showing the different ways in which the libraries have struggled with the extraordinary problems of the lean years.

Science News Letter, February 24, 1934

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